

DETAILED ACTION

Response to Amendment

This paper is provided in reply to the amendment filed on 04/23/08. The amendment has not overcome the prior art rejections yet. Refer to the abovementioned amendment for substance of applicant's rebuttal arguments and remarks. Therefore, all pending claims finally rejected over the same grounds of rejection as composed hereunder for the reasons of record:

Claim Disposition

1. Claims 1-19 and 22 have been cancelled without prejudice or disclaimer.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 20-21 and 24-32 are rejected under 35 U.S.C. 102(b) as being anticipated by the Publication "*Study on the anode behavior of Sn and Sn-Cu alloy thin film electrodes*" by Tamura et al (herein called Tamura et al). [**Note**: Tamura et al was published in 2002, see front page thereof and as annotated by the applicant on page 2 of the 06/25/04 IDS. Thus, Tamura et al is a 102(b) reference with respect to applicant's effective filing date of 03/26/04].

As to claim 20:

Tamura et al disclose Li-ion batteries comprising an anode, a cathode and a non-aqueous electrolyte (See **1. Introduction & 2.4 Preparation of a Small Cell**). Figure 8(b) of Tamura et

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al illustrates an anode structure comprising a Cu-foil (the current collector) and a Cu-Sn-like phase first layer, and a Cu_6Sn_5 second phase layer (See **FIGURE 8(b)**). Specifically, Tamura et al reported the formation of at least 2 layers including different phases of an intermetallic compound of Sn-Cu (See 3.3 Heat Treatment effects on the structures of the active materials). *In this case, the Cu_6Sn_5 second phase layer represents the active material layer and the Cu-Sn-like phase first layer represents the protective layer. The Sn-Cu phase layers have different compositions. It is noted that the main constituents (for purposes of compositional properties and characteristics) of both the Cu-Sn-like (i.e. Cu_3Sn) phase first layer and the Cu_6Sn_5 second phase layer are different. In chemical terms, the main compositions of Cu-Sn-like (i.e. Cu_3Sn) phase first layer and the Cu_6Sn_5 second phase layer are not equal (←emphasis supplied). The main constituents of the first phase layer includes three atoms of Cu and one of Sn whereas the main constituents of the second phase layer includes six atoms of Cu and five atoms of Sn. Thus, their respective constituents are dissimilar.*

As to claims 21 and 29:

The specific X-ray diffraction measurement is deemed to be an inherent characteristic or property of the negative electrode components. Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property (i.e. X-ray diffraction measurement), is necessarily present in the prior art material.

“Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are

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necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

See MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims

As to claim 24:

Tamura et al reported thicknesses of less than 0.5 μ m or less than 500 nm (See description of FIGURE 8, at the bottom of page 52 & 3.3 Heat Treatment effects on the structures of the active materials).

As to claims 25-26:

Tamura et al employ Cu as the element that does not substantially react with Li (See FIGURE 8(b), 3.3 Heat Treatment effects on the structures of the active materials and TITLE)

As to claims 27-28:

Tamura et al shows a Cu₆Sn₅ second phase layer (See 3.3 Heat Treatment effects on the structures of the active materials and FIGURE 8(b)).

As to claims 30-31:

Tamura et al reported thickness of 0.5 μ m and 2 μ m (See 2.1 Preparation of an electrodeposited tin anode without/with heat treatment; 2.4 Preparation of a Small Cell & 3.3 Heat Treatment effects on the structures of the active materials)

As to claims 32:

Tamura et al use a Cu-foil as the current collector (See 3.3 Heat Treatment effects on the structures of the active materials; 1.Introduction on page 49 and FIGURE 8(b))

Thus, the present claims are still anticipated.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 20-21, 23, 25-26 and 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al 2003/0180619 in view of in view of the Publication “*Study on the anode behavior of Sn and Sn-Cu alloy thin film electrodes*” by Tamura et al (herein called “*the Tamura et al publication*”). [**Note:** Tamura et al was published in 2002, see front page thereof

and as annotated by the applicant on page 2 of the 06/25/04 IDS. Thus, Tamura et al is a 102(b) reference with respect to applicant's effective filing date of 03/26/04].

The present claims are geared toward a non-aqueous secondary battery wherein the disclosed inventive concept comprises the specific intermetallic compound active material and the protective layer.

As to claims 20 and 33 (see additional disclosure below for other limitations of claim 33):

Tamura et al'619 disclose a rechargeable non-aqueous lithium battery comprising an anode, a cathode and a non-aqueous electrolyte (P0020/CLAIM 18). The negative electrode has a current collector and a thin alloy film provided thereon and composed of a metal which alloys with Li such as Sn, Ge, In, Al, Si and like (CLAIM 1/P0008) and a metal which does not alloy with Li such as Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/ CLAIM 1). The thin alloy film forms an intermetallic compound useful as the active material (P0008, ABSTRACT). Tamura et al specifically exemplifies intermetallic compounds formed of an alloy of Sn-Co, Sn-Ni, Sn-Fe, Sn-Pb and Sn-Zn (P0048, 0059-0063/TABLE 3-4) and Sn-Ni-Co (P0074-0075).

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

As to claims 21, 29 and 33:

The specific X-ray diffraction measurement is deemed to be an inherent characteristic or property of the negative electrode components. Accordingly, products of identical chemical

composition can not have mutually exclusive properties, and thus, the claimed property (i.e. X-ray diffraction measurement), is necessarily present in the prior art material.

“Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

See MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims

As to claims 23 and 33:

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

As to claims 25-26 and 33:

Element which does not alloy with Li are Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/ CLAIM 1).

As to claims 30-31:

Thickness of the thin alloy film is about 2 μm (P0031, 0059, 0069-0070, 0074/See EXPERIMENTS 1-5). *Thickness is taught with sufficient specificity.*

As to claim 32:

Current collector is made of C, Ni, Ti, and/or Fe (P0012/P0031, 0059, 0069-0070).

Tamura et al'619 discloses a non-aqueous secondary battery according to the foregoing aspects. However, the preceding prior art reference fails to expressly disclose the specific main

constituent element of the protective layer being different from that of the intermetallic compound.

As to claim 20 :

The Tamura et al publication discloses Li-ion batteries comprising an anode, a cathode and a non-aqueous electrolyte (See **1. Introduction & 2.4 Preparation of a Small Cell**). **Figure 8(b)** of Tamura et al illustrates an anode structure comprising a Cu-foil (the current collector) and a Cu-Sn-like phase first layer, and a Cu_6Sn_5 second phase layer (See **FIGURE 8(b)**). Specifically, Tamura et al reported the formation of at least 2 layers including different phases of an intermetallic compound of Sn-Cu (See **3.3 Heat Treatment effects on the structures of the active materials**). *In this case, the Cu_6Sn_5 second phase layer represents the active material layer and the Cu-Sn-like phase first layer represents the protective layer. The Sn-Cu phase layers have different compositions. It is noted that the main constituents (for purposes of compositional properties and characteristics) of both the Cu-Sn-like (i.e. Cu_3Sn) phase first layer and the Cu_6Sn_5 second phase layer are different. In chemical terms, the main compositions of Cu-Sn-like (i.e. Cu_3Sn) phase first layer and the Cu_6Sn_5 second phase layer are not equal (←emphasis supplied). The main constituents of the first phase layer includes three atoms of Cu and one of Sn whereas the main constituents of the second phase layer includes six atoms of Cu and five atoms of Sn. Thus, their respective constituents are dissimilar.*

In light of these disclosures, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to make the negative electrode protective layer from a material different than the negative electrode intermetallic compound in the battery of Tamura et al'619 as the Tamura et al publication (*other reference*)

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teaches the advantages of employing electrode layers made of different materials for obtaining good cycle performance and larger specific capacity, thereby, rising the energy density of the battery cell.

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over the publication WO 02/25757 (heretofore the WO'757) [Note: *Tamura et al 2003/0180619 is an English language equivalent version of the WO'757 as it belongs to the same patent family. Thus, for purpose of rejection, Tamura et al is cited hereinbelow*] in view of the Publication "Study on the anode behavior of Sn and Sn-Cu alloy thin film electrodes" by Tamura et al (*herein called "the Tamura et al publication"*). [Note: *Tamura et al was published in 2002, see front page thereof and as annotated by the applicant on page 2 of the 06/25/04 IDS. Thus, Tamura et al is a 102(b) reference with respect to applicant's effective filing date of 03/26/04*].

As to claim 33:

Tamura et al (the WO'757) disclose a rechargeable non-aqueous lithium battery comprising an anode, a cathode and a non-aqueous electrolyte (P0020/CLAIM 18). The negative electrode has a current collector and a thin alloy film provided thereon and composed of a metal which alloys with Li such as Sn, Ge, In, Al, Si and like (CLAIM 1/P0008) and a metal which does not alloy with Li such as Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/CLAIM 1). The thin alloy film forms an intermetallic compound useful as the active material (P0008, ABSTRACT). Tamura et al specifically exemplifies intermetallic compounds formed of an alloy of Sn-Co, Sn-Ni, Sn-Fe, Sn-Pb and Sn-Zn (P0048, 0059-0063/TABLE 3-4) and Sn-Ni-Co (P0074-0075).

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

The specific X-ray diffraction measurement is deemed to be an inherent characteristic or property of the negative electrode components. Accordingly, products of identical chemical composition cannot have mutually exclusive properties, and thus, the claimed property (i.e. X-ray diffraction measurement), is necessarily present in the prior art material.

"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

Element which does not alloy with Li are Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/ CLAIM 1).

Tamura (the WO'757) discloses a non-aqueous secondary battery according to the foregoing aspects. However, the preceding prior art reference fails to expressly disclose the

specific main constituent element of the protective layer being different from that of the intermetallic compound.

As to claim 33:

The Tamura et al publication discloses Li-ion batteries comprising an anode, a cathode and a non-aqueous electrolyte (See **1. Introduction & 2.4 Preparation of a Small Cell**). **Figure 8(b)** of Tamura et al illustrates an anode structure comprising a Cu-foil (the current collector) and a Cu-Sn-like phase first layer, and a Cu_6Sn_5 second phase layer (See **FIGURE 8(b)**). Specifically, Tamura et al reported the formation of at least 2 layers including different phases of an intermetallic compound of Sn-Cu (See **3.3 Heat Treatment effects on the structures of the active materials**). *In this case, the Cu_6Sn_5 second phase layer represents the active material layer and the Cu-Sn-like phase first layer represents the protective layer. The Sn-Cu phase layers have different compositions. It is noted that the main constituents (for purposes of compositional properties and characteristics) of both the Cu-Sn-like (i.e. Cu_3Sn) phase first layer and the Cu_6Sn_5 second phase layer are different. In chemical terms, the main compositions of Cu-Sn-like (i.e. Cu_3Sn) phase first layer and the Cu_6Sn_5 second phase layer are not equal (←emphasis supplied). The main constituents of the first phase layer includes three atoms of Cu and one of Sn whereas the main constituents of the second phase layer includes six atoms of Cu and five atoms of Sn. Thus, their respective constituents are dissimilar.*

In light of these disclosures, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to make the negative electrode protective layer from a material different than the negative electrode intermetallic compound in the battery of Tamura (the WO'757) as Tamura et al publication (*other reference*)

teaches the advantages of employing electrode layers made of different materials for obtaining good cycle performance and larger specific capacity, thereby, rising the energy density of the battery cell.

Response to Arguments

9. Applicant's arguments filed 04/23/08 have been fully considered but they are not persuasive.

10. Applicant is of the opinion that the invention as instantly claimed is patentable over the prior art of record because the prior art "*fail to disclose or suggest the configuration (b) of the present invention [i.e. the conductive layer is provided between the active material layer of the negative electrode and the collector]*" and "*configuration (c) [i.e. the main element of the conductive layer is different from the main element of the intermetallic compound]*". However, the examiner strenuously but respectfully disagrees with applicant's opinion.

11. Regarding the first point [*configuration (b)*], applicant has gone to a great length to explain that in Tamura et al (2002) "*the Cu₃Sn-like phase as shown in Fig. 8(b) constitutes an active material layer. From the descriptions and Fig 8(b), it is clear that the "conductive layer" is not present between the active material layer and the collector*". In other words, what applicant is contending is that because the semantic of the limitation "*active material layer*" corresponding to the Cu₃Sn-like phase does not read on "*conductive layer*" his invention now represents a great innovation and novelty over the prior art. Fine. **But applicant is totally overlooking that electrode active materials by nature are also conductive materials.** Take a look at the definition offered by Merriam-Webster's Collegiate Dictionary (10th Edition):

"electrode - a conductor used to establish electrical contact". At this point, the Examiner verily believes that no more explanation is necessary because the above discussion is self-explanatory of the connotation of the electrode active material layer; and applicant's conductive layer in no way positively excludes *"electrode active materials"*. More than enough has been said.

12. With respect to the second point [*configuration (c)*], applicant has contended that the present claims are patentably distinct because the Tamura publication *"Study on the anode behavior of Sn and Sn-Cu alloy thin film electrodes"* does not show *"the main constituent element of the protective layer is different from that of the intermetallic compound"*. In response, the examiner largely disagrees with applicant's characterization of the amendatory language *"the main constituent element"*. Concerning this matter, the examiner verily believes that in the instant case the properties and characteristics of both *"the intermetallic compound"* and the *"protective layer"* are intrinsically related to their final composition resulting from the synergistic effect obtained by combining specific numbers of atoms of one element (e.g. atoms of Cu) and specific number of atoms of another element (i.e. atoms of Sn). The *"main constituent"* for purposes of defining compositional behavior and properties is NOT copper (Cu) alone or individually as alleged by the applicant. Rather, *"the main constituents"* for purposes of defining compositional behavior and properties are the specific combination of element atoms forming the particular composition. Therefore, the main constituent elements are distinct.

In this case, the Cu_6Sn_5 second phase layer represents the active material layer and the Cu-Sn-like phase first layer represents the protective layer. The Sn-Cu phase layers have different compositions. It is noted that the main constituents (for purposes of compositional properties and characteristics) of both the Cu-Sn-like (i.e. Cu_3Sn) phase first layer and the

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Cu₆Sn₅ second phase layer are different. In chemical terms, the main compositions of Cu-Sn-like (i.e. Cu₃Sn) phase first layer and the Cu₆Sn₅ second phase layer are not equal (←emphasis supplied). The main constituents of the first phase layer includes three atoms of Cu and one of Sn whereas the main constituents of the second phase layer includes six atoms of Cu and five atoms of Sn. Thus, their respective constituents are dissimilar.

13. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). This applies with equal force to arguments advanced by the applicant as to Tamura'619 and Tamura WO'757 (*i.e. they merely disclose a thin alloy film provided on a current collector*) in the context that they both were proposed as references in combinatory-obviousness rejections citing more than one reference.

14. The main contention of applicant's arguments is centered on the assertion that the prior art "*fails to disclose the claimed feature of protective layer for preventing a reaction between the active material layer and the collector*". However, this assertion is found unconvincing by the Examiner for the same reasons that applicant has expressed about the gradual reaction between the active material layer and the collector occurring during the progression of a charging-discharging cycle (See entire paragraph bridging pages 14-15 of the 07/25/07 amendment). Accordingly, at a minimum, the protective layer which is present in the prior art of record as the mixed layer identified by the Examiner satisfies the function of "gradually" preventing the reaction between the active material layer and the collector. Applicant's invention, as functionally recited in the present claims, in no way clearly stipulates the degree for preventing

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the reaction; applicant's invention merely calls for a protective layer "capable of" preventing (minimizing) a reaction between the active material layer and the collector. As such, the Examiner is still of the view that the prior art protective layer comprising a mixed layer is capable of achieving the function claimed by the applicant because such a mixed layer contains Ti, Ni, Zr and/or W, and even though it does not "*completely*" prevent the reaction between the active material layer and the collector, it does "*gradually*" prevent or minimize that reaction during charging/discharging cycles due to the degree of separation between the active material layer and the collector provided by the mixed layer interposed therebetween. Thus, since the mixed layer is sandwiched by the active material layer and the collector, it can be fairly stated that the mixed layer prevents a direct interaction between the active material layer and the collector; therefore, reaction between these components is also prevented. This also applies with equal force to all the arguments advanced by the applicant concerning how representative Comparative Example 1 is with respect to the claimed invention (See page 15 of the 07/25/07 amendment) and applicant's discussion of Tamura et al on page 17 of the 07/25/07 amendment (the basis for the second 102 rejection, item 11 of the 04/25/07 Office Action).

In this respect, applicant is reminded that "*Arguments that the alleged anticipatory prior art is nonanalogous art' or teaches away from the invention' or is not recognized as solving the problem solved by the claimed invention, [are] not germane' to a rejection under section 102.*" *Twin Disc, Inc. v. United States*, 231 USPQ 417, 424 (Cl. Ct. 1986) (quoting *In re Self*, 671 F.2d 1344, 213 USPQ 1, 7 (CCPA 1982)). See also *State Contracting & Eng'g Corp. v. Condotte America, Inc.*, 346 F.3d 1057, 1068, 68 USPQ2d 1481, 1488 (Fed. Cir. 2003) (*See MPEP 2131.05 Nonanalogous or Disparaging Prior Art*).

15. Applicant's arguments concerning the formation of the mixed layer including heat treatment or the like (see page 14 of the 07/25/07 amendment) is completely irrelevant to the patentability of the present claims because the present claims are directed to a product per se (i.e. the non-aqueous secondary battery) and the method of making it does not further define patentable subject matter of a product.

16. In response to applicant's arguments concerning the representation of EXAMPLE 1 and its improved and excellent properties when compared to Tamura et al (page 16 of the 07/25/07 amendment), it is to be noted that such an example includes specific compositional materials or constituents, configuration and/or arrangements not actually recited in at least independent claim 20. Thus, the evidence or argument advanced by the applicant is not fully commensurate in scope with the claimed invention. Additionally, any assertion of expected or superior results is ineffective to overcome a rejection based on a 102 anticipatory analysis, *In re Wiggins*, 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973) (*See MPEP 2131.04 Secondary Considerations*).

17. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *the thickness of the collector does not change or decrease*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The claimed subject matter of at least independent claim 20 is entirely silent about any unchanged or not-decreased thickness of the collector.

18. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/
Primary Examiner, Art Unit 1795